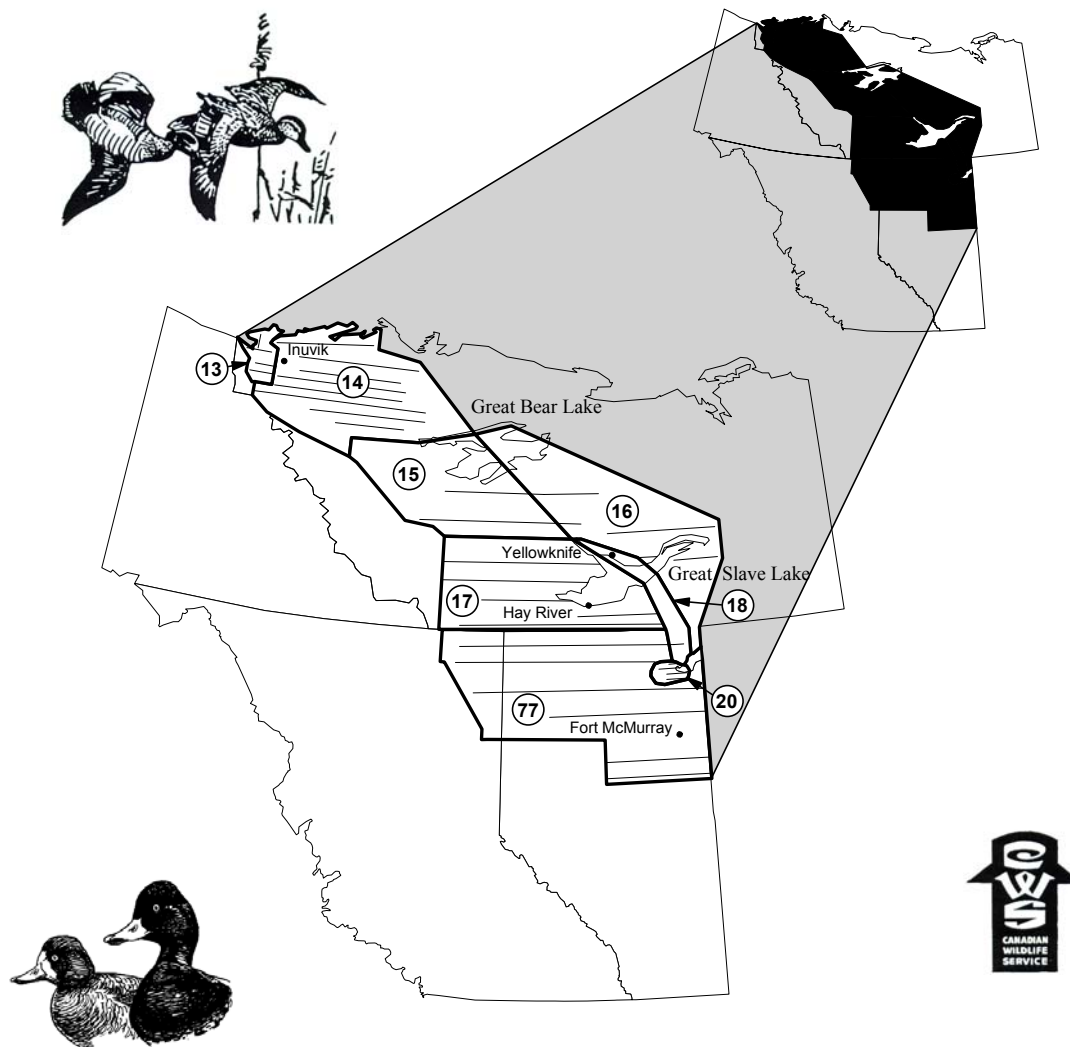


# 2003

## NORTHERN ALBERTA, NORTHEASTERN BRITISH COLUMBIA AND THE NORTHWEST TERRITORIES



The data presented in this report are preliminary. Final estimates are available from the U.S. Fish and Wildlife Service, Office of Migratory Bird Management, Patuxent Wildlife Research Center, Laurel, Maryland 20708-4016.

TITLE: Waterfowl Breeding Population Survey for Northern Alberta, Northeastern British Columbia, and the Northwest Territories (Mackenzie District)

STRATA SURVEYED: 13, 14, 15, 16, 17, 18, 20, 77

DATE: May 21 to June 13, 2003

DATA SUPPLIED BY: United States Fish and Wildlife Service  
Carl Ferguson, DMBM-WPS, Laurel, MD  
Arthur Straughn, Bombay Hook NWR, Smyrna, DE

ABSTRACT:

Waterfowl habitat was rated as good throughout most of the crew area 10 survey unit with winter precipitation normal to well above normal in the western half of the northern Alberta and northeastern British Columbia, and most of the Mackenzie district of the Northwest Territories and normal to below normal in the eastern half of northern Alberta. Spring arrived late in the eastern half of Alberta, north and east of Yellowknife and in the extreme northern portion of the survey unit.

Estimated waterfowl numbers overall showed an increase from last year, +11.2% (Table 1). Gadwall, redhead, canvasback, ruddy duck and long-tailed duck show a decline from last year. American wigeon (+29.5%), blue-winged teal (+146 %), ring-necked duck (+88%), bufflehead (+32%), goldeneye (+30%), scoter (+38%), and mergansers (+53.4%) showed the largest increases. Total estimated ducks were +11.2 percent above 2002, a +15.9 percent above the ten-year average and -15.5 percent below the long-term average.

METHODS:

This survey was conducted using procedures found in the Standard Operating Procedures for Aerial Breeding Ground and Habitat Survey, Section IV (A), revised in 1977. Two laptop computers, using a program developed by the Migratory Bird Office, Juneau, AK and the Division of Migratory Bird Management, Laurel, Maryland, were used again this year to process the field data. Both the pilot/observer and the observer had previously flown northern bush areas in Canada and are experienced waterfowl observers; all data are considered to be compatible.

Transect flights within Strata 13 through 77 were flown using N-783, A Cessna-206 amphibian. The survey was initiated out of Edmonton, Alberta on May 21 and completed on June 13 at Yellowknife, NWT. It involved approximately 91.2 hours of aircraft flight time, 9,145 total nautical miles, and 4,756 nautical miles of transects comprising 301 survey segments. Survey dates for individual stratum are as follows: Stratum 77, May 21-26; Stratum 20, May 28; Stratum 18, May 28-June 13; Stratum 17, May 27-June 29; Stratum 16, May 30 - June 5; Stratum 15, June 5-13; Stratum 14, June 6-13; and Stratum 13, June 9. One segment in Stratum 18, transect 3 was not flown because of a aviation NOTAM on avoiding the area because of rock blasting and eleven segments in Stratum 17, transect 4 were not flown because the nesting chronology

for dabblers was too far advanced when we tried to fly it on June 13. These eleven segments were not flown on June 5 because no 100LL aviation fuel was available at Ft. Simpson, NWT, on the west side of the survey area until June 10<sup>th</sup>. Inclement weather, mandatory crew rest and scheduled aircraft maintenance delayed the survey five days.

#### HABITAT CONDITIONS:

##### Northern Alberta & Northeastern British Columbia

Spring started early in this portion of the survey area, but stalled in early May in the eastern half of Alberta. Winter precipitation was below normal in this eastern half also, but around normal to above normal in the western portion. This east/west dividing line started about 60 miles west of Slave Lake, AB and proceeded on an east, northeast line to Fort Smith NWT. Indicator lakes to the east, Legend and Namur, in the Birch Mountains and Margaret and Wentzel, in the Caribou Mountains were frozen tight during the survey period as spring was about one week later than normal. Some flocked waterfowl species, i.e. scaup, ring-necked duck, and mergansers were observed during the survey, which also indicated that spring was somewhat late. Below normal winter precipitation slightly reduced water levels in most mid to large size wetlands and lakes. Water-levels in beaver flowages, which constitutes a large proportion of waterfowl breeding habitat in Alberta, was considerably down in the eastern portion of this survey unit. Stream levels in small and mid-size lakes were down. Water levels in shallow wetland basins formed from runoff from higher surrounding topography were low. Waterfowl breeding habitat was rated as fair for this area.

The western half of Alberta received normal to above normal winter precipitation and spring seem to be about one week earlier than normal. This area, however, received little additional precipitation during the survey period and was starting to “dry” out during the survey period. This portion was rated as good with normal water levels in shallow wetlands and lower drainage basins. Beaver flowages, small streams, rivers, and small and medium sized lakes all had normal water levels. Adequate nesting habitat was available around the margins of the wetlands. As indicated by the early spring this year in the western portion of this unit, ice out was nearly complete on the mid-size and larger lakes at higher elevations in the Buffalo Head, Hawk, and Cameron Hills.

##### Athabasca Delta

Spring water levels and the occurrence and magnitude of ice jams or ice dams in the Peace and River directly determine spring flood levels in the Athabasca Delta, an area just southwest of Fort Chipewyan. In 2003, the Delta was still flooded during the survey period with the waterfowl species widely spread out in this additional habitat. The water level was the highest since 1997. During the last week of May, water levels in Lake Clair, Baril, Mamawi, and Richardson lakes were very high as were their connecting streams and adjacent sloughs. Water extended well up

into all willow and shrub fringes around the wetlands. Also, as indicated by the late spring in eastern Alberta, there was more ice than normal on Lake Claire (70%). We ferried across the Delta after the completion of the survey on June 15 enroute to Edmonton, AB. Water levels had dropped little during the preceding two weeks. However, all of the shallow sloughs and wetlands were ice-free during the survey period. This area was rated as good.

#### Northwest Territories (Mackenzie District)

Precipitation this past winter was average to above average for the southern and central portion of the survey area in the Northwest Territories and below average for the northern portion of the Mackenzie River valley, Norman Wells to Inuvik. The timing of spring was about normal in the southern portion of the survey unit and about one week plus late in the area north and east of Yellowknife and in the northern portion of the Mackenzie River valley. Willow Lake on the Horn Plateau north of the Mackenzie River was about 20% open on May 29. The area north and east of Yellowknife, although plenty of ice was present, did have water margins opened around the small to mid-size lakes. Most of this unit was rated as good, with areas east and north of Yellowknife and the extreme northern portion rated fair because of the late spring. Also a small area in south central NWT was rated as fair due to excessive flooding due to recent rain and spring runoff.

#### SUMMARY:

Habitat conditions for nesting waterfowl species were rated as good for most of the survey unit with some drier areas in the eastern half of northern Alberta extending into the southeast area of the Northwest Territories, rated as fair. Precipitation during the survey period helped modify these conditions, although the western half of northern Alberta dried out considerably during the survey period.

Spring was approximately a week early in the western half of northern Alberta and northeastern British Columbia, and the southern portion of the Northwest Territories. It was about one week plus late in the northern portion of the Mackenzie River valley, Yellowknife area, north and east of Yellowknife and the eastern half of northern Alberta. Observed ratios of breeding pairs to lone drakes was good for mallards, and most other dabblers. Some flocked groups of scaup, scoters, ring-necked duck, and mergansers were observed occasionally in the northern portion of the survey area and in the eastern half of northern Alberta.

#### BREEDING POPULATION ESTIMATES:

The long-term trend in adjusted waterfowl breeding population estimates is presented in Appendix 1. The 2003 waterfowl breeding population data are listed by stratum for this survey

unit in Table 1, along with a comparison to 2002, and to the ten-year and long-term means. Total ducks indicated a +11.2% increase from 2002, a +15.9% increase from the ten-year mean, and a -15.5% decrease from the long-term mean.

The dabbling duck population estimate increased +9.8% from 2002, increased to +17.2% above the ten-year mean, but remained -5.8% below the long-term mean. Dabbler species that increase from 2002 include: American wigeon (+29.5%), blue-winged teal (+142.6%), and northern shoveler (+14.4%).

The breeding population estimate for diving ducks also increased slightly this year (+6.7%). Estimates are above the ten-year mean (+7.7%), but below the long-term mean (-20.5%). Diver species that increased over 2002 estimates include ring-necked duck (+84.7%), bufflehead (+32.3%), and goldeneye (+29.8%). The remainder of the diver species declined from last year ranging from redhead (-38.4%) to scaup (-2.6%).

Miscellaneous species increased +30.8% from 2002. They are +39.8% ahead of the ten-year mean but still down from the long-term mean (-26.2%). Increases ranged from scoter (+38%) to mergansers (+53.4%). Long-tailed duck decreased -20.2%.

## CONCLUSIONS:

1. During the survey period, habitat conditions in northern Alberta and northeastern British Columbia were observed to be good in the western half with normal or better precipitation during the winter and spring periods. The eastern half was rated as fair due to below normal winter precipitation and a later than normal spring. Below normal winter precipitation resulted in low soil moisture conditions in this area. Most of the Northwest Territories received about normal precipitation amounts during the preceding year.

Spring was about one week early in the western half of northern Alberta and the southern portion of the Northwest Territories. It was about normal to one week late in the northern half of the Mackenzie River valley and north and east of Yellowknife, and a week late in the eastern half of northern Alberta.

2. Waterfowl breeding population estimates increased slightly above the 2002 estimates (+11.2%), above the ten-year average (-15.9%), but below the long-term average (-15.5%). Several species, including mallard, American wigeon, redhead, canvasback, ring-necked duck, and bufflehead were above the ten-year average. American wigeon, redhead, canvasback, ring-necked duck, and bufflehead were also above the long-term average.

3. Waterfowl production should be slightly higher this year than 2002 for the entire survey unit. Good nesting conditions were prevalent in most of the survey area; however, dry early summer conditions and a late cold spring may reduce brood habitat and production in the eastern half of

Waterfowl Breeding Population Survey

N. Alberta, N.E. BC & NWT

northern Alberta, north and east of Yellowknife, and in the most northerly portion of survey unit in Stratum 14.

Submitted by: Carl Ferguson, Flyway Biologist

June 25, 2003

Table 1. Status of waterfowl breeding population estimates (thousands, adjusted for visibility bias) by species and stratum with comparisons against the previous year, the previous 10-year mean, and the long-term mean for Northern Alberta, Northeastern British Columbia, and the Northwest Territories.

Species/Ponds	Stratum								% Change From						
	13	14	15	16	17	18	20	77	2003 Total	2002 Total	10-Year Mean	Long- Term Mean	2002	10-Year Mean	Long- Term Mean
Ducks															
Dabblers															
Mallard	24.0	58.4	20.5	50.3	114.1	14.3	58.8	236.5	576.8	635.9	654.6	800.6	-9.3%	-11.9%	-27.9%
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	-100.0%
Gadwall	0.8	0.0	0.0	0.0	5.0	0.0	13.2	0.0	19.0	30.7	36.7	19.7	-38.2%	-48.3%	-3.6%
Am. wigeon	120.9	191.6	23.2	38.0	163.3	45.3	31.1	199.0	812.4	627.4	671.8	811.0	29.5%	20.9%	0.2%
Am. green-winged teal	12.9	13.6	51.3	9.6	201.9	16.4	8.1	413.3	727.0	744.2	618.8	643.5	-2.3%	17.5%	13.0%
Blue-winged teal	0.0	0.0	9.6	0.0	50.8	0.0	29.8	149.2	239.4	98.7	89.5	145.9	142.6%	167.7%	64.1%
N. shoveler	10.5	4.6	3.3	0.0	122.4	0.0	37.1	66.7	244.5	213.8	142.9	163.9	14.4%	71.2%	49.2%
N. pintail	10.9	49.1	5.0	32.6	29.1	2.8	9.6	12.4	151.5	171.7	150.6	356.2	-11.8%	0.6%	-57.5%
Subtotal	180.1	317.3	112.8	130.4	686.6	78.8	187.6	1077.0	2770.7	2522.4	2364.9	2940.9	9.8%	17.2%	-5.8%
Divers															
Redhead	1.7	0.0	0.0	0.0	0.0	0.0	5.0	3.2	9.9	16.1	14.7	17.5	-38.4%	-32.5%	-43.6%
Canvasback	26.3	1.1	0.0	0.0	17.0	2.7	20.2	4.0	71.3	95.0	67.9	52.5	-24.9%	5.0%	35.7%
Scaups	65.6	459.9	173.3	320.9	214.5	199.4	5.6	158.6	1597.8	1640.1	1560.2	2456.4	-2.6%	2.4%	-35.0%
Ring-necked duck	0.6	1.7	9.4	0.0	57.3	56.6	7.5	152.7	285.7	154.7	232.4	143.3	84.7%	22.9%	99.3%
Goldeneyes	2.0	0.0	0.0	0.0	5.9	0.0	3.5	24.3	35.7	27.5	43.3	90.9	29.8%	-17.5%	-60.7%
Bufflehead	0.6	1.9	37.2	24.3	64.2	57.6	5.9	195.3	387.1	292.5	304.4	266.4	32.3%	27.1%	45.3%
Ruddy Duck	0.8	0.0	0.0	0.0	11.4	0.0	4.0	20.0	36.1	44.5	27.2	22.8	-18.8%	33.1%	58.8%
Subtotal	97.5	464.7	219.9	345.2	370.3	316.3	51.6	558.0	2423.6	2270.5	2250.1	3049.9	6.7%	7.7%	-20.5%
Miscellaneous															
Oldsquaw	0.0	59.3	1.9	14.6	5.5	0.0	0.0	2.1	83.2	104.3	76.4	243.6	-20.2%	8.9%	-65.8%
Eiders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	--	--	-100.0%
Scoters	19.0	319.2	84.2	183.7	40.7	29.8	0.0	18.5	695.2	503.6	484.4	890.8	38.0%	43.5%	-22.0%
Mergansers	3.5	18.8	7.7	40.4	15.3	2.6	7.3	18.7	114.3	74.5	77.9	74.0	53.4%	46.7%	54.4%
Subtotal	22.5	397.2	93.8	238.8	61.5	32.5	7.3	39.2	892.7	682.4	638.7	1209.1	30.8%	39.8%	-26.2%
Total Ducks	300.2	1179.2	426.5	714.4	1118.5	427.6	246.5	1674.3	6087.1	5475.3	5253.7	7199.9	11.2%	15.9%	-15.5%
Canada Goose	0.0	19.3	32.4	0.0	33.4	0.0	6.1	38.7	129.8	189.8	137.8	148.8	-31.6%	-5.8%	-12.8%
Am. coot	0.0	0.0	0.0	0.0	11.6	0.0	24.5	8.5	44.7	198.1	47.3	55.1	-77.4%	-5.5%	-19.0%

Appendix 1. Long-term trend in adjusted waterfowl breeding population estimates (thousands) for Northern Alberta, Northeastern British Columbia, and the Northwest Territories.

Species/Ponds	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
Ducks										
Dabblers										
Mallard	1299.6	1148.0	816.6	1019.1	2016.3	687.2	1862.4	1102.5	1027.7	1171.1
Am. black duck	0.6	0.6	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0
Gadwall	0.6	0.0	1.6	0.6	0.3	0.0	1.3	9.1	0.0	2.5
Am. wigeon	1331.7	1102.1	1105.7	724.4	1828.5	1540.0	1586.6	819.6	788.4	1185.4
Am. green-winged teal	878.0	675.0	529.0	643.6	1726.9	851.5	1067.8	387.3	874.8	1062.1
Blue-winged teal	204.0	159.2	25.5	107.5	360.3	355.7	385.9	162.9	34.1	365.2
N. shoveler	256.4	162.1	94.0	170.1	537.7	193.3	389.7	187.2	76.9	473.7
N. pintail	1078.4	608.1	543.8	920.6	2426.1	685.8	1226.7	441.3	298.0	445.1
Subtotal	5049.2	3855.1	3116.2	3585.9	8899.9	4313.4	6520.2	3109.9	3099.9	4705.1
Divers										
Redhead	31.9	27.5	19.6	11.5	46.8	23.8	35.2	56.0	12.9	44.6
Canvasback	45.4	18.4	15.1	63.2	70.7	56.8	37.0	27.8	91.7	69.2
Scaups										
Ring-necked duck	2423.2	2297.7	2300.5	2020.8	3629.0	2347.7	2724.1	2620.7	2919.7	2572.7
Goldeneyes	189.9	200.6	114.1	91.3	393.4	164.5	69.3	122.9	112.5	137.1
Goldeneyes	202.8	93.6	88.5	142.2	492.6	122.8	264.6	230.1	32.2	127.1
Bufflehead	156.1	173.7	152.4	132.2	238.8	209.7	160.7	209.2	151.9	233.9
Ruddy Duck	19.6	15.1	6.9	8.7	44.7	23.5	17.5	1.2	22.2	2.1
Subtotal	3068.9	2826.6	2697.1	2470.1	4916.1	2948.9	3308.3	3267.9	3343.3	3186.8
Miscellaneous										
Oldsquaw	450.0	347.8	380.1	451.6	607.7	367.3	432.4	278.7	163.4	522.2
Eiders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scoters	1416.2	1219.3	1322.7	1043.0	1602.3	1606.7	1252.5	721.9	759.8	1290.2
Mergansers	101.0	52.5	74.8	127.2	95.3	137.4	131.6	53.2	94.5	82.5
Subtotal	1967.3	1619.5	1777.6	1621.8	2305.3	2111.4	1816.5	1053.8	1017.7	1894.9
Total Ducks	10085.4	8301.2	7590.9	7677.8	16121.3	9373.7	11645.0	7431.7	7460.8	9786.9
Canada Goose	361.6	414.0	148.6	285.5	502.8	264.6	131.3	90.7	232.5	17.7
Am. coot	28.2	3.0	0.0	0.0	156.8	3.9	38.8	19.2	8.7	7.5
Species/Ponds	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
Ducks										
Dabblers										
Mallard	589.9	675.9	604.6	730.0	530.8	753.1	807.6	1132.1	696.4	575.4
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	6.1	1.9	6.7	0.3	0.3	14.3	1.3	10.7	8.6	0.9
Am. wigeon	909.0	888.2	456.1	384.6	578.6	850.7	766.1	851.9	912.5	492.0
Am. green-winged teal	649.9	800.5	457.8	492.7	204.7	358.4	429.8	569.3	535.4	242.2
Blue-winged teal	173.3	52.1	9.6	5.3	14.7	21.0	33.0	81.8	10.0	31.7
N. shoveler	165.5	180.8	113.0	101.6	42.4	57.7	108.5	157.3	142.2	72.5
N. pintail	392.4	190.1	105.4	197.1	74.8	100.0	85.4	426.3	351.0	227.3
Subtotal	2886.1	2789.5	1753.2	1911.6	1446.3	2155.2	2231.7	3229.5	2656.1	1642.1
Divers										
Redhead	6.8	5.0	18.6	9.5	5.3	8.3	6.1	10.3	5.6	2.9
Canvasback	44.6	120.5	21.0	93.0	61.6	30.4	40.5	16.8	21.0	10.4
Scaups										
Ring-necked duck	2607.5	2490.3	2741.4	1970.3	2523.7	2719.4	2934.8	5090.7	3328.3	2795.1
Goldeneyes	225.5	159.6	133.7	94.3	54.9	108.4	105.9	59.7	106.9	42.2
Goldeneyes	119.3	34.7	60.3	24.3	35.0	17.6	30.7	33.3	39.3	36.2
Bufflehead	191.9	241.5	182.2	212.9	277.7	230.1	354.0	291.2	236.8	277.7
Ruddy Duck	2.1	17.5	11.1	0.6	0.9	1.8	2.5	15.2	15.0	6.7
Subtotal	3197.8	3069.1	3168.2	2404.8	2959.2	3115.9	3474.5	5517.2	3752.9	3171.2
Miscellaneous										
Oldsquaw	320.8	460.2	402.3	165.1	460.3	283.3	224.6	105.7	181.4	218.8
Eiders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scoters	965.9	611.8	712.7	606.7	855.5	1172.6	640.6	1093.5	905.4	1098.0
Mergansers	96.9	52.5	48.4	14.3	30.2	44.9	16.1	29.2	32.1	21.1
Subtotal	1383.6	1124.5	1163.4	786.1	1346.0	1500.9	881.3	1228.4	1118.8	1338.0
Total Ducks	7467.5	6983.1	6084.8	5102.6	5751.5	6772.1	6587.5	9975.1	7527.9	6151.2
Canada Goose	68.7	152.7	134.4	70.4	85.3	131.5	122.4	111.8	64.4	38.3
Am. coot	3.4	35.5	1.0	43.7	9.8	4.0	3.2	6.8	27.0	29.7



Appendix 1 (continued). Long-term trend in adjusted waterfowl breeding population estimates (thousands) for Northern Alberta, Northeastern British Columbia, and the Northwest Territories.

Species/Ponds	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Ducks										
Dabblers										
Mallard	731.9	314.7	770.4	739.4	794.9	896.2	719.2	534.1	928.4	482.6
Am. black duck	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	0.0	5.2	17.6	10.2	32.3	43.8	52.5	51.0	2.5	23.1
Am. wigeon	650.3	538.8	846.7	993.4	729.6	992.2	916.0	589.3	556.3	1187.1
Am. green-winged teal	468.3	225.6	370.6	678.7	582.6	585.6	626.2	692.4	842.9	468.5
Blue-winged teal	55.9	111.7	474.5	213.6	187.2	367.8	283.9	159.3	107.5	92.9
N. shoveler	116.3	81.9	256.2	64.4	79.7	207.4	204.5	77.9	74.5	140.9
N. pintail	381.6	246.5	532.6	244.2	196.2	289.6	314.5	103.7	392.0	399.6
Subtotal	2404.3	1524.6	3268.6	2944.0	2602.5	3382.7	3116.8	2207.6	2904.1	2794.7
Divers										
Redhead	2.4	3.1	23.4	20.2	12.4	28.7	18.4	7.2	9.9	33.8
Canvasback	32.0	37.6	48.1	29.9	28.3	59.6	113.3	48.7	55.3	51.6
Scaups	3215.2	2529.6	2900.0	2676.5	3166.2	3063.0	3028.7	2516.7	3230.8	3667.5
Ring-necked duck	73.3	61.9	179.8	153.5	90.3	101.7	94.6	61.2	101.1	89.1
Goldeneyes	33.6	47.5	74.5	112.2	169.7	184.0	108.2	74.1	69.5	298.8
Bufflehead	294.8	267.0	258.7	278.8	328.0	293.9	244.1	185.1	406.3	442.9
Ruddy Duck	4.0	1.6	26.8	8.3	7.8	19.0	28.8	23.0	118.2	51.7
Subtotal	3655.3	2948.2	3511.3	3279.4	3802.8	3750.0	3636.0	2916.1	3991.2	4635.3
Miscellaneous										
Oldsquaw	196.2	176.1	193.7	180.1	626.4	322.0	171.8	193.7	113.0	601.3
Eiders	0.0	0.0	0.0	0.0	3.2	0.0	0.0	3.0	0.0	0.0
Scoters	769.7	725.0	922.2	1202.6	1400.9	1101.8	1024.9	846.6	1077.6	1295.4
Mergansers	33.6	83.6	126.1	165.3	121.1	136.2	50.3	58.7	70.3	104.6
Subtotal	999.4	984.6	1242.0	1548.0	2151.7	1560.0	1247.0	1102.0	1260.8	2001.2
Total Ducks	7059.0	5457.5	8021.8	7771.3	8557.0	8692.7	7999.8	6225.7	8156.2	9431.2
Canada Goose	89.4	57.8	45.2	61.8	69.7	58.7	131.4	77.1	172.5	67.8
Am. coot	11.8	0.0	295.1	59.8	5.1	337.0	128.9	54.8	133.9	47.1

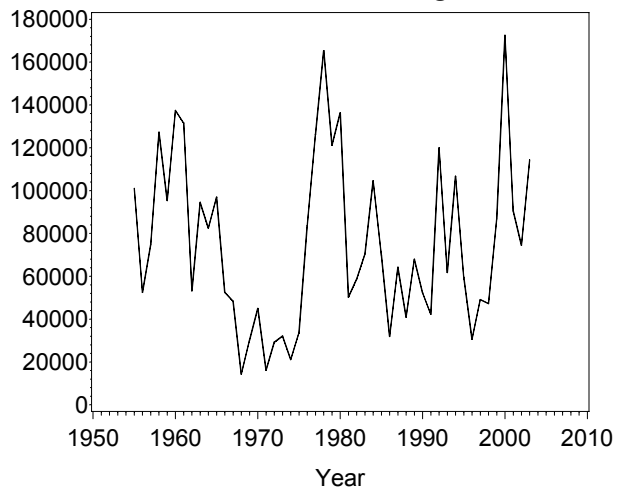
  

Species/Ponds	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Ducks										
Dabblers										
Mallard	632.2	1194.9	705.4	1006.8	581.6	565.9	536.0	501.4	595.1	350.5
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	13.7	48.9	13.0	18.3	28.1	44.1	49.9	58.0	48.8	42.6
Am. wigeon	692.2	469.7	832.3	818.5	598.6	426.7	687.4	580.9	652.1	382.2
Am. green-winged teal	615.6	765.6	991.9	882.9	905.7	677.1	396.1	485.0	488.4	575.5
Blue-winged teal	118.4	382.2	250.6	370.5	76.3	29.2	79.9	156.6	205.0	99.1
N. shoveler	108.9	204.8	210.2	239.5	184.6	160.6	160.9	184.1	216.5	101.7
N. pintail	276.3	175.7	218.9	188.2	178.2	146.6	218.3	266.7	226.0	92.3
Subtotal	2457.3	3241.8	3222.4	3524.7	2553.0	2050.1	2128.4	2232.7	2431.9	1643.9
Divers										
Redhead	9.8	30.6	4.9	15.7	20.1	16.0	40.0	10.6	40.8	7.9
Canvasback	14.1	47.1	27.8	61.5	81.1	30.0	74.5	46.8	68.9	27.0
Scaups	2375.4	2315.4	2518.1	2267.3	2339.3	1843.2	1936.5	1658.2	1701.9	1845.7
Ring-necked duck	80.5	64.8	90.9	164.2	127.5	114.8	113.7	106.9	184.2	136.8
Goldeneyes	93.9	149.2	42.2	53.3	76.6	30.8	39.8	44.1	51.0	96.9
Bufflehead	249.1	318.2	386.2	370.5	358.6	272.7	264.3	208.5	247.6	310.7
Ruddy Duck	16.2	92.9	8.6	17.8	44.5	34.7	38.4	43.5	59.6	7.7
Subtotal	2839.0	3018.2	3078.8	2950.2	3047.7	2342.3	2507.1	2118.6	2353.8	2432.7
Miscellaneous										
Oldsquaw	267.7	113.7	270.2	231.1	279.3	43.6	76.3	47.0	64.6	79.1
Eiders	16.2	2.9	0.0	2.0	4.5	0.0	0.0	0.0	0.0	0.0
Scoters	1045.4	909.0	1188.9	748.6	1129.0	432.7	647.4	549.1	633.8	372.6
Mergansers	69.9	31.9	64.2	40.9	67.9	52.2	42.3	119.9	61.8	106.7
Subtotal	1399.3	1057.5	1523.3	1022.6	1480.8	528.5	765.9	716.0	760.2	558.4
Total Ducks	6695.5	7317.5	7824.4	7497.6	7081.4	4920.9	5401.5	5067.3	5545.9	4634.9
Canada Goose	172.8	163.9	326.5	261.6	154.0	120.2	161.4	144.5	174.9	93.0
Am. coot	47.8	32.0	70.1	227.8	131.7	38.4	70.9	51.0	29.9	10.7

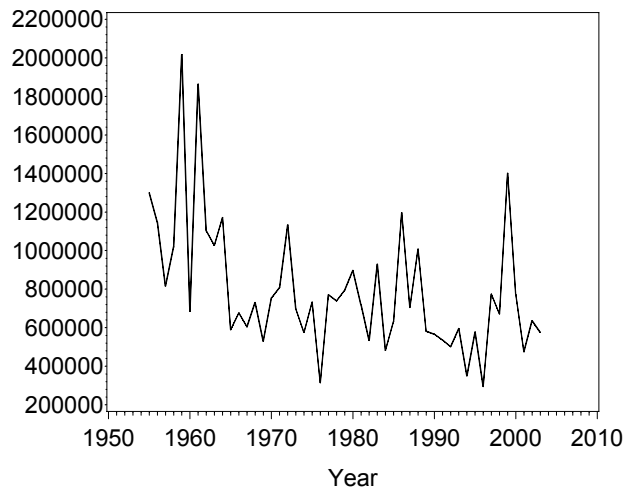
Appendix 1 (continued). Long-term trend in adjusted waterfowl breeding population estimates (thousands) for Northern Alberta, Northeastern British Columbia, and the Northwest Territories.

Species/Ponds	1995	1996	1997	1998	1999	2000	2001	2002	2003
Ducks									
Dabblers									
Mallard	576.5	295.1	773.7	671.8	1400.3	771.2	475.7	635.9	576.8
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	34.3	9.6	24.4	39.9	69.9	42.7	24.5	30.7	19.0
Am. wigeon	694.8	394.0	983.7	687.2	952.8	677.5	666.4	627.4	812.4
Am. green-winged teal	605.5	281.7	440.2	616.4	810.4	954.8	671.0	744.2	727.0
Blue-winged teal	90.0	30.9	86.8	156.6	56.2	28.1	43.2	98.7	239.4
N. shoveler	65.0	41.7	90.9	306.9	140.6	148.9	102.7	213.8	244.5
N. pintail	88.4	38.3	175.1	173.1	162.9	209.5	169.1	171.7	151.5
Subtotal	2154.5	1091.3	2574.8	2651.9	3593.0	2832.6	2152.5	2522.4	2770.7
Divers									
Redhead	6.6	5.5	26.7	17.4	11.9	7.8	6.2	16.1	9.9
Canvasback	109.6	45.6	66.7	39.1	116.9	72.9	37.9	95.0	71.3
Scaups	1657.9	1294.4	1473.4	1355.4	1926.6	1440.0	1266.9	1640.1	1597.8
Ring-necked duck	125.1	99.3	359.5	285.4	303.9	450.3	224.9	154.7	285.7
Goldeneyes	31.0	22.9	17.5	55.7	44.2	56.1	30.0	27.5	35.7
Bufflehead	323.1	235.1	387.9	269.9	410.9	248.8	317.9	292.5	387.1
Ruddy Duck	15.2	10.4	24.0	16.1	70.5	14.7	8.8	44.5	36.1
Subtotal	2268.5	1713.2	2355.6	2038.8	2885.0	2290.5	1892.5	2270.5	2423.6
Miscellaneous									
Oldsquaw	93.7	47.1	107.7	50.5	111.6	48.2	57.3	104.3	83.2
Eiders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scoters	407.2	359.9	679.0	282.9	525.2	549.0	531.1	503.6	695.2
Mergansers	59.5	30.6	49.1	47.3	86.7	172.5	90.4	74.5	114.3
Subtotal	560.4	437.6	835.8	380.6	723.6	769.6	678.9	682.4	892.7
Total Ducks	4983.4	3242.0	5766.1	5071.4	7201.6	5892.7	4723.9	5475.3	6087.1
Canada Goose	162.4	151.8	79.1	82.2	163.8	115.9	165.0	189.8	129.8
Am. coot	5.6	3.6	10.6	91.7	17.1	67.0	38.3	198.1	44.7

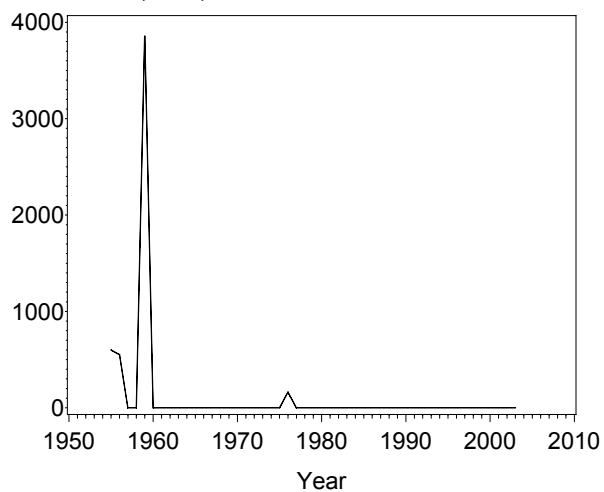
Strata 13-18, 20, 77 Mergansers



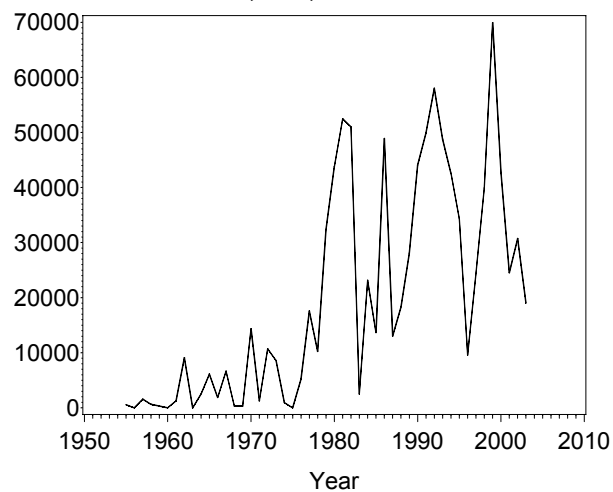
Strata 13-18, 20, 77 Mallard



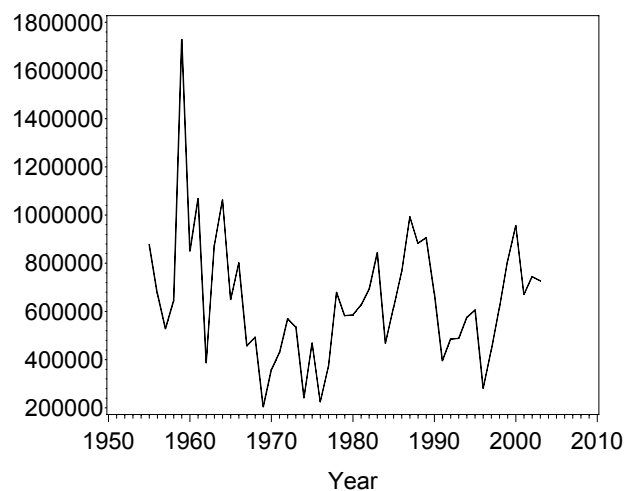
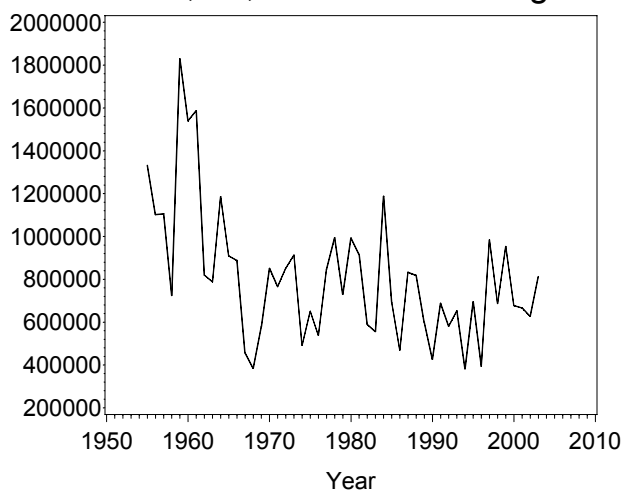
Strata 13-18, 20, 77 American black duck



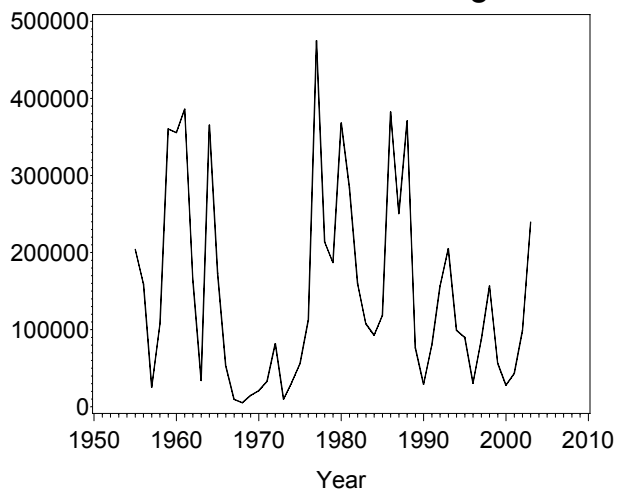
Strata 13-18, 20, 77 Gadwall



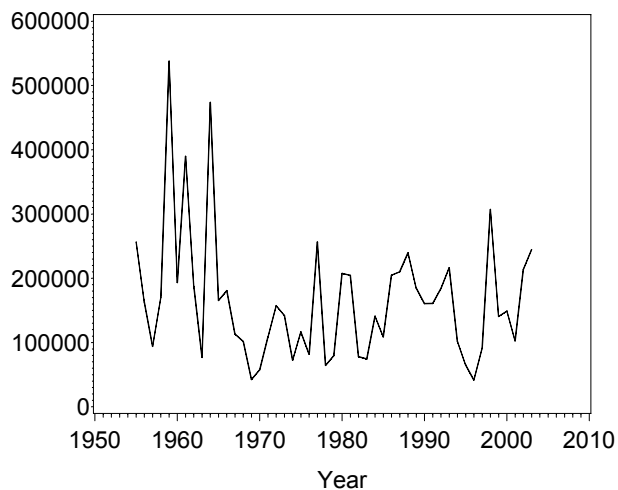
Strata 13-18, 20, 77 American wigeon



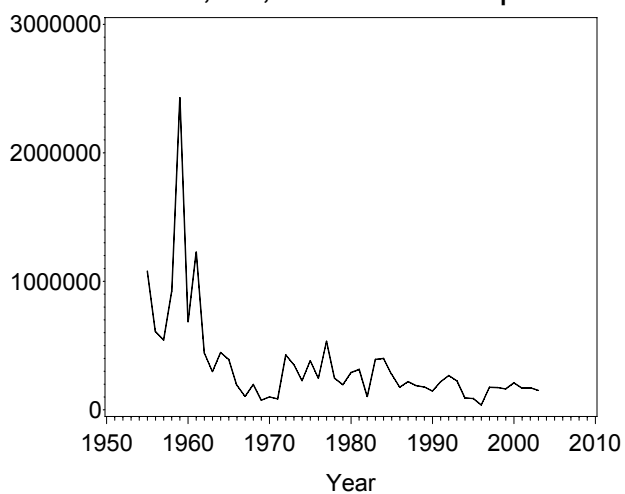
Strata 13-18, 20, 77 Blue-winged teal



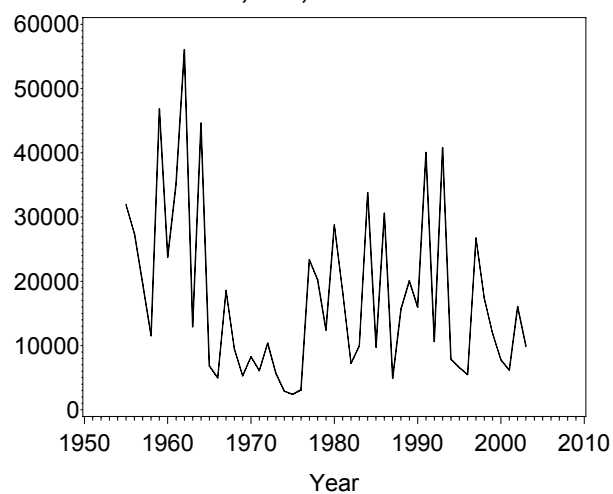
Strata 13-18, 20, 77 Northern shoveler



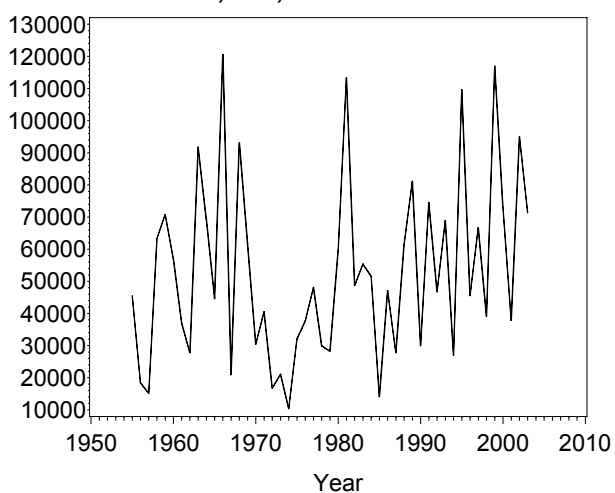
Strata 13-18, 20, 77 Northern pintail



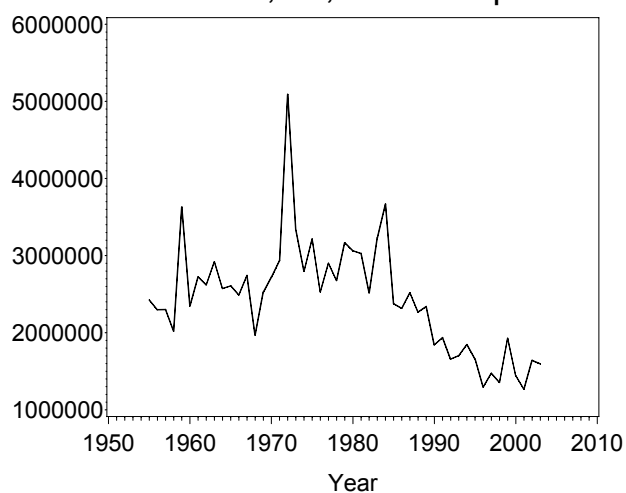
Strata 13-18, 20, 77 Redhead



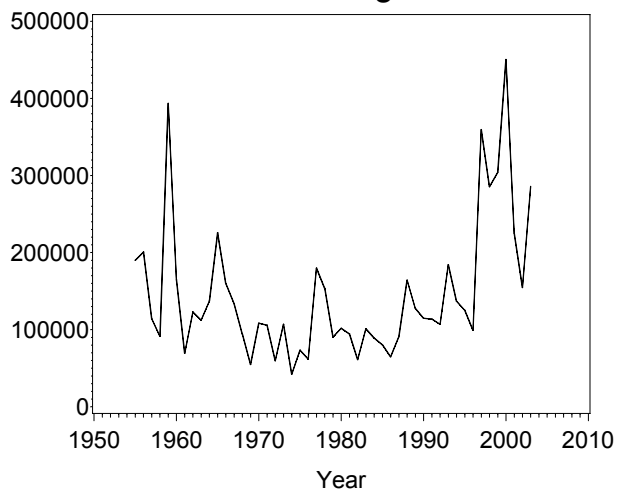
Strata 13-18, 20, 77 Canvasback



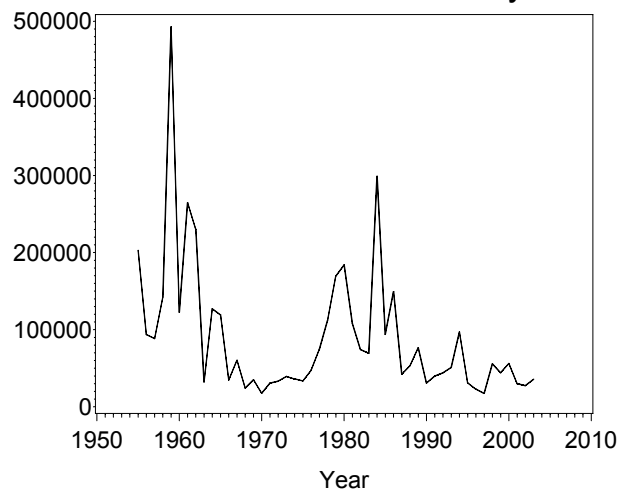
Strata 13-18, 20, 77 Scaups



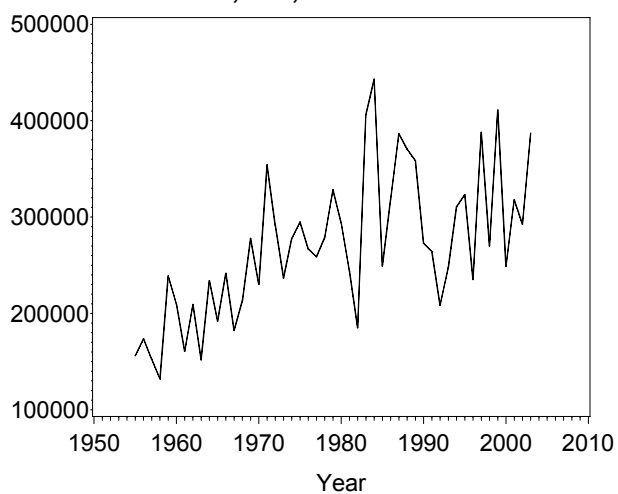
Strata 13-18, 20, 77 Ring-necked duck



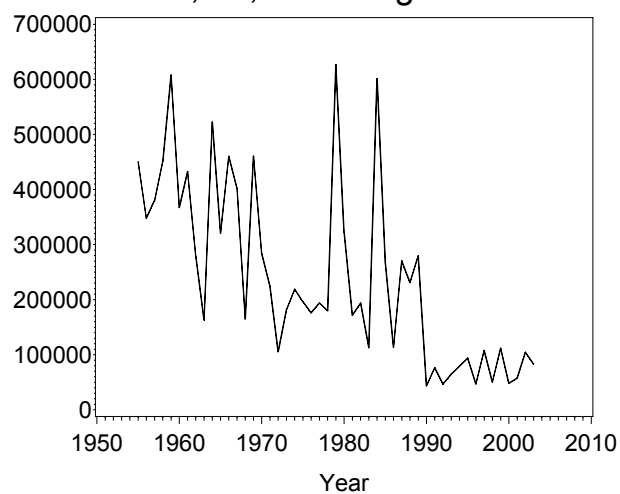
Strata 13-18, 20, 77 Goldeneyes



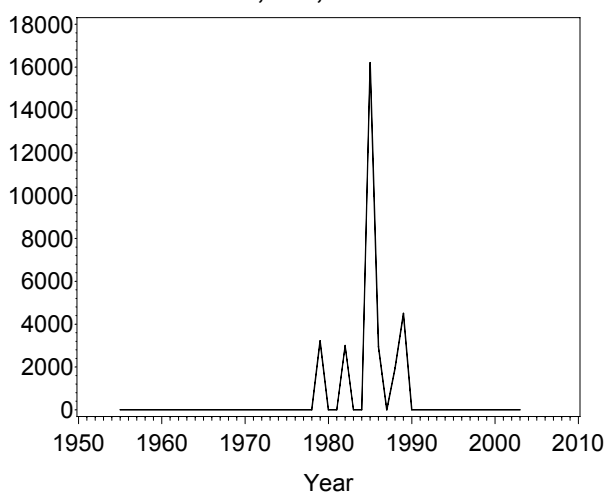
Strata 13-18, 20, 77 Bufflehead



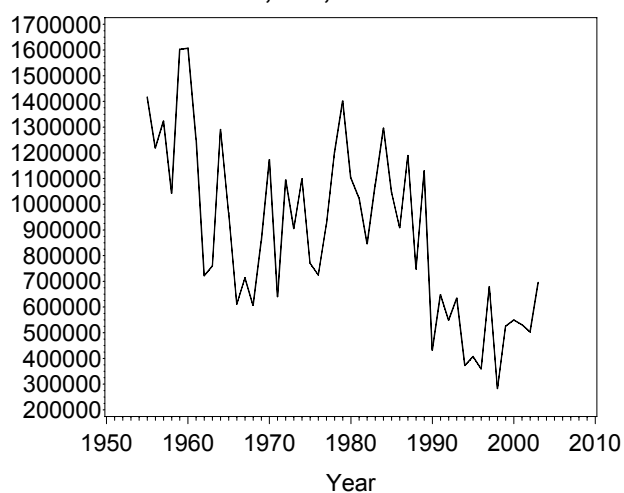
Strata 13-18, 20, 77 Long-tailed duck



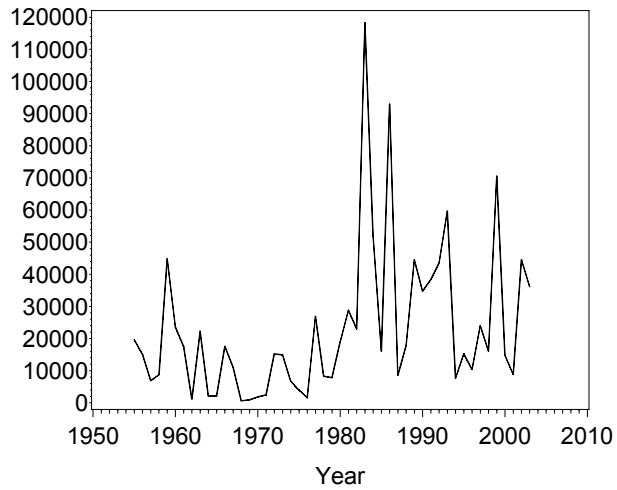
Strata 13-18, 20, 77 Eiders



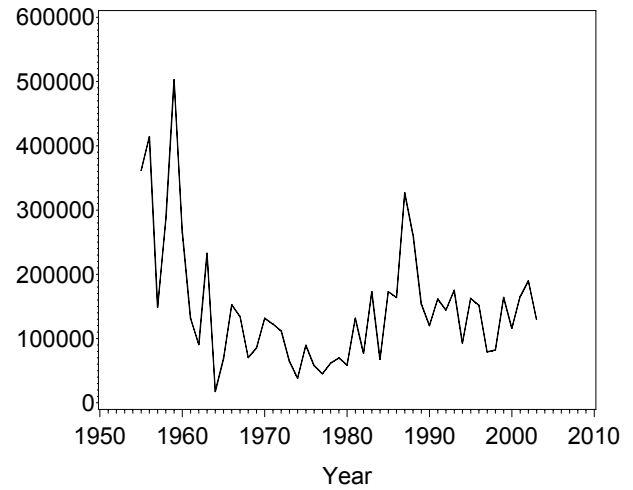
Strata 13-18, 20, 77 Scoters



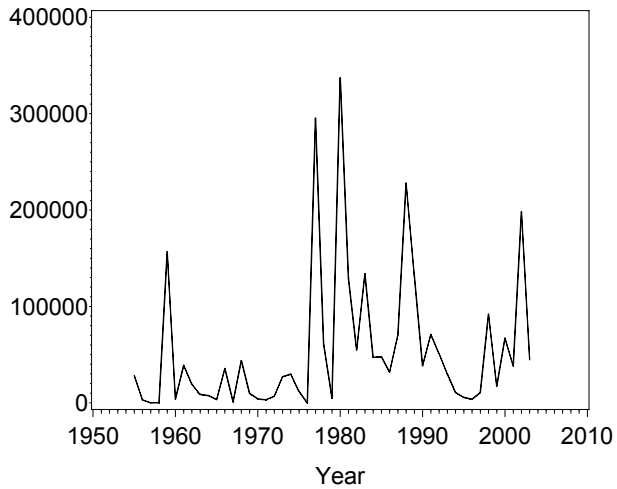
Strata 13-18, 20, 77 Ruddy Duck



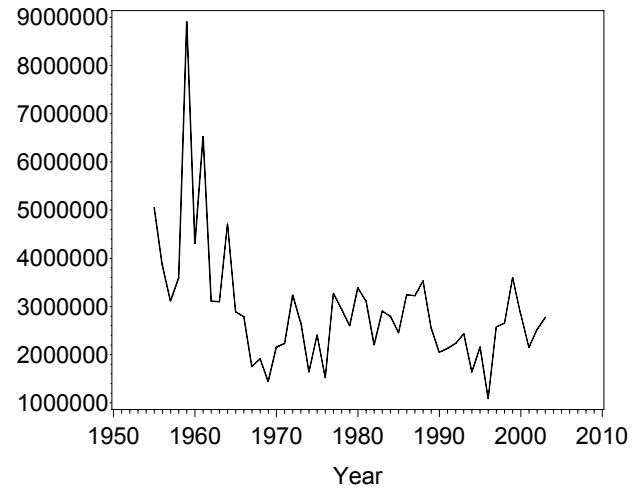
Strata 13-18, 20, 77 Canada Goose



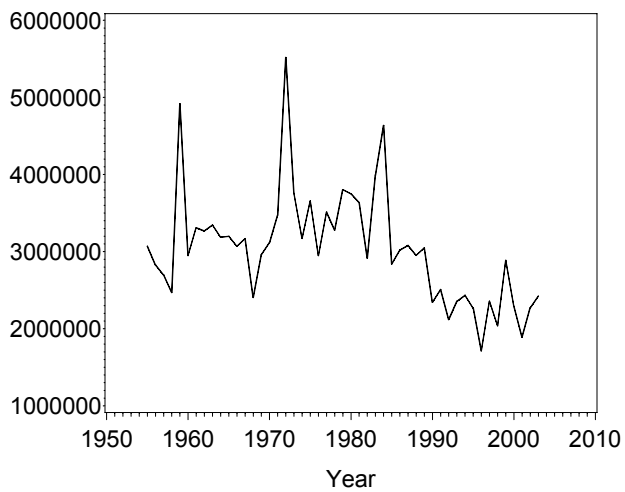
Strata 13-18, 20, 77 American coot



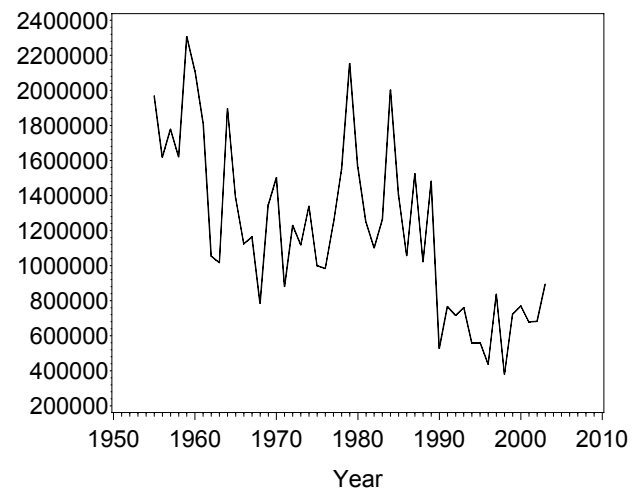
Strata 13-18, 20, 77 Dabblers



Strata 13-18, 20, 77 Divers



Strata 13-18, 20, 77 Miscellaneous



Strata 13-18, 20, 77 Total Ducks

